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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,838	07/18/2003	Robert Laun	235.032US1	4779
21186	7590	09/26/2005	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH P.O. BOX 2938 MINNEAPOLIS, MN 55402-0938			FRANK, RODNEY T	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/622,838	<b>Applicant(s)</b> LAUN, ROBERT	
	<b>Examiner</b> Rodney T. Frank	<b>Art Unit</b> 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/20/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 15-17, 19-22, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumar (U.S. Patent Number 6,046,960). Kumar discloses an apparatus for discriminating true echoes from false echoes in an ultrasonic liquid gauging system, comprising: means for producing electrical representations of an echo sequence received after an ultrasonic transmission, wherein the echo sequence contains one or more returned echoes that may be a true or false echo; and means for determining returned echo energy, wherein echo energy is a factor used to distinguish a true echo from a false echo (Please see the abstract).
2. With regard to claim 15, an evaluation means for determining at least one expectancy range for a filling level echo or a false echo generated by a filling level measurement device, wherein the at least one expectancy range is determined in consideration of the temporal behavior of at least two past filling level echoes or false echoes is disclosed in view of column 3 lines 20-55, column 6 lines 44-62, and claims 8-15.

With regard to claim 16, the expectancy being determined by considering the temporal behavior of at least two past filling level echoes or false echoes which may

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have been assigned in the past is disclosed in view of claims 8-15 and column 6 line 44 through column 7 line 4.

With regard to claim 17, the memory wherein the envelope curve is stored after an A to D conversion with its echo data including the location, time and amplitude in an array of a predetermined size is disclosed in view of column 7 lines 60 through column 8 line 10 and claim 17.

With regard to claims 19-22, the evaluation means being able to assign the detect individual echoes to expectancy ranges in the past for a filling level or false echo, and to determine the filling level from an echo assigned to the filling level is disclosed from column 6 line 44 through column 7 line 4.

With regard to claim 26, the device being in a filling level measurement device is disclosed in claims 19 and 20.

3. Claims 1-14, 18, 23-25, and 27-30 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kumar.

4. In reference to method claim 1-14, the examiner will admit that a method for determining at least one expectancy for a filling level echo or a false echo is not explicitly disclosed in the Kumar reference. However, Kumar explains in great detail, and discloses in the specification and the claims a method for determining true and false echoes whereby the steps of determining said echoes utilizes a method very similar to the one claimed.

For example, with reference to claim 1, Kumar discloses a method whereby a first and second echo are identified and assigned to an envelope curve. This is

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disclosed in view of column 3 lines 20-38. Column 7 lines 1-4 disclose that echoes are expected to occur within a particular time window, which would indicate an expectancy range is determined. Column 6 lines 20-23 disclose that the memory stores information in a temporal manner. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the method of claim 1 is taught in view of the Kumar reference.

With reference to claim 2, Kumar discloses in column 7 line 2 that subsequent echoes can be expected, thus identifying further echoes would be disclosed for determining the expectancy.

With reference to claim 3, column 6, line 20 for example, discloses the use of transmit/receive cycles.

With reference to claims 4 and 5, since claim 7 lines 1-4 states that subsequent echoes can be expected, where there is no limit set on how many subsequent echoes there can be, then the device determining a new expectancy would also be disclosed.

With reference to claim 6, the details of the method including the limitations of claim 6 is considered to be disclosed in view of the claims of Kumar.

With reference to claims 7, the data storage technique is not disclosed to be an array, but the overall method whereby the echo data is stored and past data is compared is disclosed in column 7 lines 5-9.

With reference to claim 8, figures 1A through 1C shown that the data includes location, time, and amplitude for the echo data.

With reference to claims 9-13, and 23-25, though the specific mathematical process used may not be disclosed explicitly in the Kumar reference, one of ordinary skill in the art may use any of these techniques in order to obtain data results via a microprocessor and stay in the spirit of the invention. Kumar even alludes to this in column 8 lines 49-54 whereby modifications within the spirit of the invention are disclosed to be apparent to those skilled in the art.

With reference to claim 14, a determination of a data set size is disclosed in column 7 lines 42-53.

With reference to claim 18, though an image processing unit is not explicitly disclosed Kumar discloses that other components, though not disclosed, would be within the spirit of the invention in column 4 lines 3-23.

In reference to claim 27, though a data link is not explicitly disclosed the use of a data link is well known in the art of level measurement and it's implementation in a system would be an obvious design choice, if needed, to one of ordinary skill in the art.

In reference to claims 28-30, since it is disclosed that the controller uses a CPU, then the use of a computer program to control the device, would therefore be disclosed in view of the Kumar reference.

### ***Response to Arguments***

5. Applicant's arguments filed 14 July 2005 have been fully considered but they are not persuasive. The applicant stated two primary arguments. The first was that the 102 rejection was traversed based on the grounds that Kumar does not disclose "...the at least one expectancy range is determined in consideration of the temporal (time)

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behavior of at least two past filling level echoes or false echoes." The examiner disagrees. Column 6, beginning at line 44 and concluding with column 7 with line 4, discloses the following:

In the specific embodiment of FIG. 2, the first echo received back after the blanking period is initially assumed to be the true echo. This is typically the case, for example, in fuel level sensing systems. Thus, the counters 26 are triggered in response to the first echo. However, as explained hereinbefore, false echoes can be received such as due to air bubbles or fuel/water interfaces. In such circumstances, the first echo back after blanking may not be the true echo. In accordance with the invention, the microprocessor is configured to determine the echo energy for echo envelopes that exhibit maximum peak amplitudes during a transmit/receive cycle. The microprocessor further determines which echo has the maximum energy. When the maximum energy echo has been identified, its temporal location can be determined. If the maximum energy echo occurred at the same time as the first echo that disabled the echo counters 26, then the first echo is confirmed as the true echo. If the maximum echo energy occurred at a different time than the first echo, then the maximum energy echo is considered to be the true echo.

The false echo resolution of the first echo can also be confirmed by determining the energy content of the first echo and verifying that the energy level is too low for a true echo from the fluid surface. Further verification can be accomplished by using a time domain window after a true echo position has been determined. In other words, once a true echo is identified, subsequent true echoes can be expected to occur within a specific time window around the previous echo.

With this paragraph, Kumar states a relationship being used between the detection of energy and the time the echo is received. He further explicitly states that once the maximum energy has been identified, its temporal location can be determined, and if the time of the maximum energy is the same as the time of the first echo, then the first echo is determined to be the true echo. Since a direct relationship to time and

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energy is used to determine which is a true echo and which is a false echo, then the use of temporal behavior is accounted for and disclosed. The same passage discloses measurements being taken for each transmit/receive cycle. Column 5 lines 46 through 49 disclose an example of utilizing five transmit/receive cycles. If this same example is followed, then you can base the measurement considering the behavior of at least two past echoes. For at least these disclosures, the Kumar references is deemed to disclose the claimed limitations of the present invention and thus the rejection given would be valid.

The second argument from the applicant is in reference to the 103 rejections over Kumar where the applicant feels that the examiner uses official notice for the rejection and requests that the examiner provide a reference to justify the rejection. The examiner would like to first point out that official notice was not taken, and in the previous rejection, and in the paragraphs above, the examiner attempted to point out the columns and lines from Kumar which were determined to disclose the subject matter of the claims. There was no "...mere conclusionary statement of subjective belief..." as the applicant states. While the first paragraph of the rejection does give a broad recitation of the basic, broad subject matter as the applicant argues, the following paragraphs make an attempt to specifically show where the examiner has found support in Kumar disclosing the claimed subject matter. Again, pointing to column 6 beginning at line 44 and concluding with column 7 with line 4, the process used by Kumar to determine the first echo versus a false echo is disclosed. In this passage, there is a determining step (line 57 of column 6 states a temporal location can be determined).



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The maximum energy is compared to the time said energy is received, and further the energy sets various counters in the circuit. The time these counters are disabled are taken into account in the determination of echoes. The time behavior is taken into account as the amplitude of the echo (i.e. the energy of the echo) would be determined at time and over a window of time (i.e. an expectancy range), as disclosed in Kumar. Claim 3 of Kumar even specifically discloses that the calculating of the energy involves summing a series of values around a peak value for discrete time intervals (i.e. utilizing time/temporal behavior as amplitude would be the behavior of the measured signal), which again would give a range for which the peak energy is expected (i.e. an expectancy range). Further, as stated above, since the example is given of multiple transmit/receive cycles, the use of the device taking prior measured data into account for future measurements (i.e. a prior echo as in claim 28 or a prior expectancy range as in claim 30) is also deemed to be disclosed in the Kumar reference. For at least these reasons, the reference discloses the claimed limitations, though not verbatim, and official notice was not used, but specifics from the reference itself and thus the rejection in view of Kumar would be valid.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9-5:30 p.m. EST.

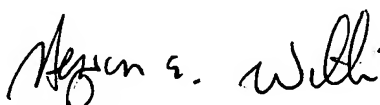
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF  
September 20, 2005

  
HEZRON WILLIAMS  
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